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MEMORANDUM

SITE MANAGEMENT
SECTION

TO: * Royal Nadeau
EPA/ERT

FROM: Anthony Lombardo II
ERT/TAT

George Klinger II ~~201 GSK~~
ERT/TAT

THRU: W. Scott Butterfield *Confidential WS*
ERT/TATL

SUBJECT: Results of U.S. Scrap, Chicago, Illinois
Preliminary Soil Gas Survey

DATE: September 19, 1985

TAT-12-F-00134
TDD 12-8509-01
PCS 3088

EPA Region 5 Records Ctr.



247100

GENERAL

A preliminary soil gas survey was performed at the U.S. Scrap, Chicago, Illinois site on September 4-9, 1985, by Royal Nadeau and Allen Humphrey of EPA/ERT, George Klinger of ERT/TAT, and three EERU field technicians. Approximately 69 stations were surveyed. Wherever possible, stations were screened for Lower Explosive Limit (LEL), % gas (as methane), temperature, and total organic vapors (as benzene).

Air bag samples were taken at 48 stations. Of these, 24 were analyzed in the field for aromatic hydrocarbons and total hydrocarbons using a Photovac portable gas chromatograph. Twenty-eight (28) samples were analyzed in-house for the same parameters using a Photovac. Eight samples were selected for analysis by GC/MS at a later time. They were fixed onto Tenax-sorbent tubes on September 13. Samples analyzed in-house may have low recoveries due to sample degradation.

An RBA Gascope combustible gas meter was used to measure % LEL and % gas. These readings are for total organic vapors as methane. One-hundred % LEL is defined as the minimum amount of methane in air needed for combustion to occur. The detection limit of this instrument in either mode is at least four orders of magnitude above that of the Photovac.

Tables of preliminary soil gas survey results, Photovac results, and chromatograms are attached.

PROBLEMS/SOLUTIONS

An unmarked sample bag was received in-house for analysis. This was analyzed and showed a significant amount of total volatile organics, toluene, and xylene.

Two bag samples are unaccounted for; these are C22 and E32. They were not analyzed in the field or received for analysis in-house. The data sheet for Sample B12 was missing; this sample was analyzed in the field using the Photovac.

The same Photovac was used for in-field and in-house analyses. In-field analyses were conducted using its SE-30 chromatographic column (the unit has two different columns). The SE-30 column did not function properly during the in-house analysis of the samples which forced the utilization of the Photovac's second column, a CSP-20 M column. This column does not permit separation and accurate quantification of TCE (trichloroethylene) and PCE (perchloroethylene).

RESULTS FROM THE FIELD MONITORING OF VOLATILE ORGANICS
AT U.S. LEAD SITE
CHICAGO, ILLINOIS
CONDUCTED BY U.S. EPA/ERT

STATION	HSU (PPM)	ZLEL ¹	ZGas ²	TOTAL V.O. (AS TOLUENE)	TEMP. (°F)	DEPTH (FT.)	Bag Sample ³
A13	0	0	0	-	71.5	2.5	
A16	1	0	54	-	78	3.5	
A17	0	0	25	-	78	3.0	
A18	0	0	20	100	-	2.0	x
A22	0	0	0	-	-	-	
B05	-	-	-	128	64	2.5	x
B09	11	-	-	ND	74.8	2.5	x
B12	-	-	-	1000	-	1.5	x
B14	100	0	0	-	77	4.5	
B20	2	0	0	-	-	3.0	
B24	-	0	0	91.4	70	3.0	x
B26	-	0	0	6.65	62	4.0	x
B27	-	-	-	98.5	83.5	4.0	x
B28	-	-	-	49.7	-	4.5	x
B30	-	-	-	3.32	73	3.5	x
B32	-	0	0	25 ⁴ , 9.8 ⁵	80	3.0	x
C07	15	-	-	ND	-	2.5	x
C08	3.5	-	-	-	74.5	3.0	
C09	30	-	-	1000	70.9	3.5	x
C10	?	-	-	-	71.5	4.5	
C11	20	0	0	-	95.2	2.5	
C12	13	0	0	1000	81.3	2.5	x
C13	0	0	4	-	70	4.0	
C14	120	-	-	800	70	4.0	x
C18	-	-	-	-	93	1.5	
C20	1	0	0	-	71	2.0	
C22	15	0	0	-	72	5.6	x
C24	-	0	0	282	-	4.0	x
C27	-	-	-	1.8	87	4.0	x

ND : Not detected.

ZLEL : Lower Explosive Limit (as methane).

ZGas : Z volatile organics (as methane).

V.O. : Volatile Organics.

- : Not recorded or no analysis.

* : In-field, in-house analyses respectively.

1 : Penetration not possible, refusal seven times.

2 : Two samples taken, north and south of mark.

3 : Ambient air.

4 : See Table 3.

5 : Result questionable.

6 : Bag marked as C30.

TABLE I
CONTINUATION
TESTS FOR THE PRELIMINARY DETERMINATION
AT U.S. STEEL SITE
CHICAGO, ILLINOIS
CONDUCTED BY U.S. EPA ERT

STATION	ENU (PPM)	LEVEL	GAS	TOTAL V.O. (AS TOLUENE)	TEMP. (°F.)	DEPTH (FT.)	gas sample
C28	-	-	-	-	103	5.0	
C30	-	-	-	228	72	4.0	X
C32	-	0	0	ND, 211+	68	4.0	X
C33	-	-	-	8.5	68	4.0	X
D07	25	0	-	>1000	-	3.0	X
D08 ²	140	0	0	>1000	64	2.5	X
D08	100	-	-	-	-	5.0	
D09	20	-	-	50	74.8	3.5	X
D10	2	-	-	>1000	70.4	2.5	X
D11	8	-	-	-	72.0	4.0	
D12	20	0	20	>1000	54	4.0	X
D14	-	0	0	ND	65	3.5	X
D20	20	0	0	10	72	5.0	X
D22	2.5	0	0	-	74	2.6	
D24	-	0	0	ND, 10.6+	68	3.0	X
D26	-	-	-	ND, 129	75	4.5	X
D27	-	-	-	412	91	4.0	X
D28	-	-	-	1198	88	5.0	X
D30 ⁶	-	-	-	107	71	3.5	X
D32	6	-	-	-	88	2.0	X
D33	-	-	-	340	-	5.0	X
E03	-	-	-	>100<1000	75.5	2.0	X
E03	54	0.2	-	>100<1000	74.9	5.0	X
E05	-	-	-	-	73	2.0	X
E10	-	-	-	-	75.0	2.0	
E11	25	44	0	1000	68.2	2.5	X
E12	-	0	52	>1000	67.6	4.5	X
E14	5	0	0	-	-	3.0	
E16	14	0	0	ND	76	2.0	X
E18	5	0	0	-	68	3.0	
E20 ¹	-	-	-	-	-	-	
E22	90	-	-	690	77	4.0	X
E24	-	0	0	1113	71	2.4	X
E26	-	-	-	392	71	2.5	X
E27	-	0	0	100, 1881	83	4.5	X
E28	-	-	-	-	73	1.0	
E30	-	-	-	50.7	-	5.0	X
E32	8	0	0	-	83	2.5	X
F29	-	-	-	3568	85	4.5	X
F27	-	0	0	4512	88	4.0	X
DW ³	-	-	-	1.5	-	-	X
UW ³	-	-	-	ND	-	-	X

TABLE 2

IN-HOUSE PYROLYSIS ANALYSIS OF
S. 12 GAS SAMPLES
FROM
U.S. SCRAP SITE
CHICAGO, ILLINOIS

STATION	RESULTS (PPM)					
	SAMPLE VOLUME (UL)	TOTAL AF TOLUENE	TOLUENE	TOLUENE	STYRENE-TOLUENE	TOLUENE
B05	2.5 FT.	50	108	4.62	ND	12.6
B24	3 FT.	50	91.4	ND	2.61	ND
B26	4 FT.	50	6.65	ND	2.15	4.52
B27		50	98.5	5.41	0.21	0.72
B28	4.5 FT.	50	49.7	2.12	15.5	23.3
B30	3.5 FT.	50	3.32	ND	0.11	ND
B32		50	9.8	0.173	0.192	0.014
C24	4 FT.	50	282	ND	6.40	41.6
C27		50	1.8	ND	ND	ND
C30**	4 FT.	50	228	14.5	16.6	44.5
C32	4 FT.	50	211	213*	ND	2.73
C33	5 FT.	50	8.5	ND	ND	ND
D8		50	1.5	ND	ND	ND
D24		50	10.6	0.10	0.085	0.86
D26		50	129	8.0	15.9	ND
D27		50	412	23.3	2.35	2.20
D28	5 FT.	50	1198	523	ND	6.13
D30**	4 FT.	50	107	7.8	1.87	ND
D32		50	92.3	0.88	0.52	42.2
D33	5 FT.	50	349	185*	10.3	18.8
E05	2 FT.	50	20.2	1.52	1.30	ND
E22	4 FT.	50	690	489*	26.3	ND
E24		50	1113	1.80	62.2	ND
E26	2.5 FT.	50	392	0.50	3.53	32.4
E27	4.5 FT.	50	1881	97.2	203	ND
E30	5 FT.	50	50.7	11.6	6.13	ND
F25		5	3568	1540*	277	203
F27	4 FT.	5	4512	74.3	202	94.1
Unmarked Sample		50	251	ND	2.62	ND
						31.1

* : Benzene is a main constituent.

** : Both bags were marked as C30. The above may be reversed.

TABLE I

IN-FIELD PYROLYSIS ANALYSES OF
SOIL GAS SAMPLES
FROM
U.S. SCRAP SITE
CHICAGO, ILLINOIS

STATION	SAMPLE VOLUME ML	TOTAL AS TOLUENE	ETHANE	TOLUENE	ETHYL- BENZENE	XYLENE	TCE
A18	50	>100	50	50	100	>100	>100*
B39	50	ND	ND	ND	ND	ND	ND
B72	5	>1000	50	50	>50	>100	>100*
B32	50	LARGE UNKNOWN 25 PPM	ND	ND	ND	ND	ND
C07	50	ND	ND	ND	ND	ND	ND
C09	3.5 FT.	5	>1000	100	500	>1000	>1000*
G12	5	>1000	ND	>1000	>1000	>1000	1000
C14	5	800	100	200	50	200	200
C32	50	ND	ND	ND	ND	ND	ND
D07	5	>1000	ND	>10	>10	>10	>100
D08	2.5 FT.	5	1000	40	100	ND	150
D09	3.5 FT.	50	50	8	8	ND	ND
D10	5	>1000	ND	1000	200	>1000	>100
D12	4 FT.	50	>1000	ND	1000	ND	ND
D14	50	ND	ND	ND	ND	ND	ND
D20	50	10	ND	ND	ND	ND	ND
D24	50	ND	ND	ND	ND	ND	ND
D26	50	ND	ND	>100	>100	>100	ND
E03	2 FT.	5	>100<1000	>100	>100	10	>100
E03	5 FT.	5	>100<1000	>100	>100	10	>100
11	5	1000	50	1000	100	1000	400
12	4.5 FT.	5	>1000	>1000	>1000	>1000	>1000
216	50	ND	ND	ND	ND	ND	ND
E27	50	100	10	10	10	20	ND
UW	50	ND	ND	ND	ND	ND	ND

*: PCE detected.

~~PHOTOLAB~~

sample 509

sample 509

sample 509

EXPERIMENTAL
CALIBRATION RUN SEPTEMBER 8 1965
SAMPLE #
CROSS SPEED
PLATE SPEED
EXPOSURE TIME
FLASH TIME
TEMPERATURE

EXPERIMENTAL
CALIBRATION RUN SEPTEMBER 8 1965
SAMPLE #
CROSS SPEED
PLATE SPEED
EXPOSURE TIME
FLASH TIME
TEMPERATURE

EXPERIMENTAL
CALIBRATION RUN SEPTEMBER 8 1965
SAMPLE #
CROSS SPEED
PLATE SPEED
EXPOSURE TIME
FLASH TIME
TEMPERATURE

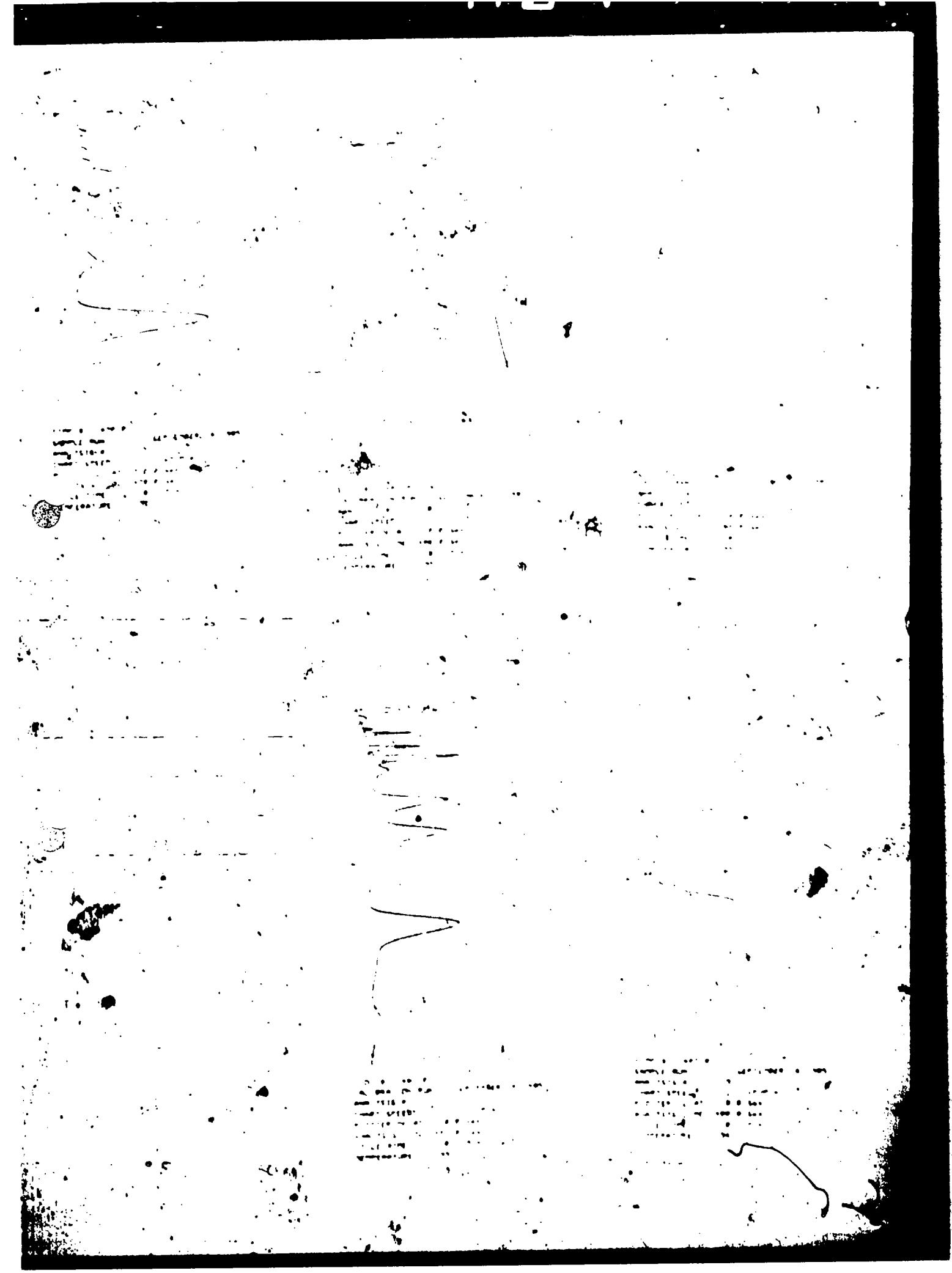
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CALIBRATION RUN SEPTEMBER 8 1965
SAMPLE #
CROSS SPEED
PLATE SPEED
EXPOSURE TIME
FLASH TIME
TEMPERATURE

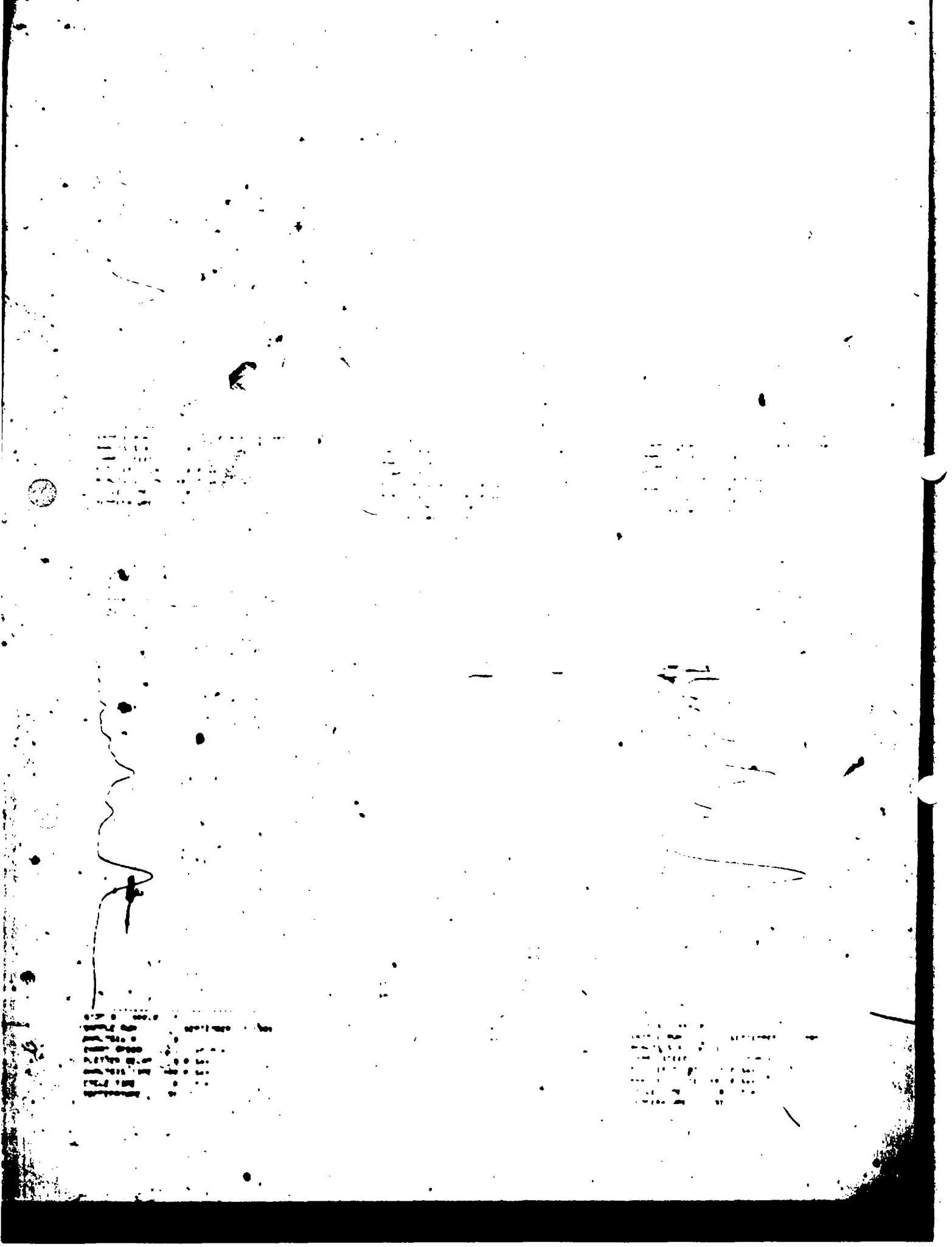
~~PHOTOLAB~~

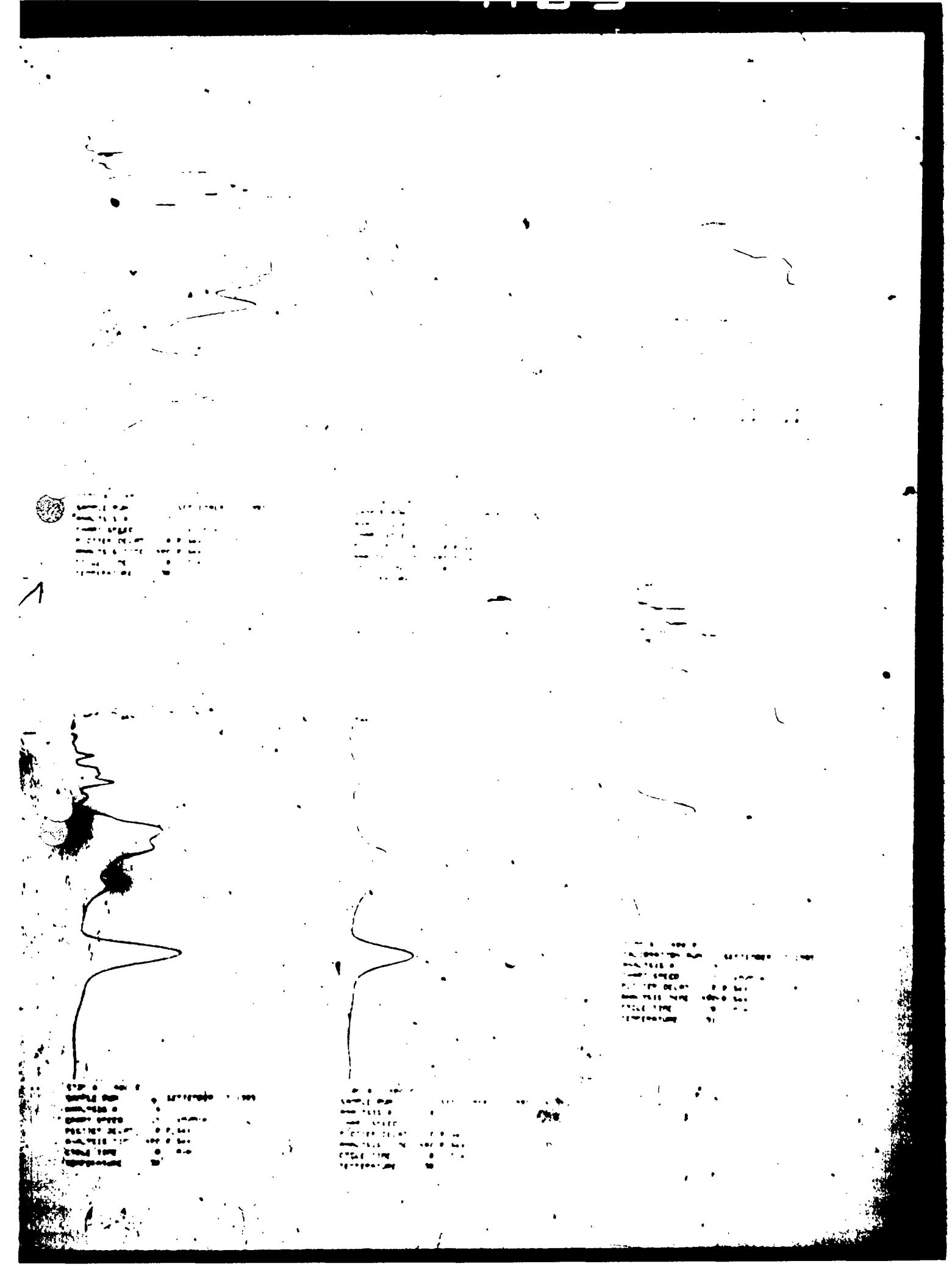
sample 509

EXPERIMENTAL
CALIBRATION RUN SEPTEMBER 8 1965
SAMPLE #
CROSS SPEED
PLATE SPEED
EXPOSURE TIME
FLASH TIME
TEMPERATURE

EXPERIMENTAL
CALIBRATION RUN SEPTEMBER 8 1965
SAMPLE #
CROSS SPEED
PLATE SPEED
EXPOSURE TIME
FLASH TIME
TEMPERATURE





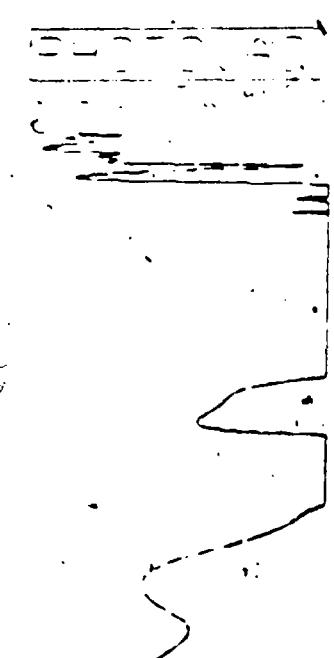


NAME	ADDRESS	TELEPHONE
WILLIAM B. COOPER	1000 N. 100 E.	555-1234
JOHN D. COOPER	1000 N. 100 E.	555-1234
ROBERT COOPER	1000 N. 100 E.	555-1234
CHARLES COOPER	1000 N. 100 E.	555-1234
EDWARD COOPER	1000 N. 100 E.	555-1234
FRANCIS COOPER	1000 N. 100 E.	555-1234
GEOFFREY COOPER	1000 N. 100 E.	555-1234
HAROLD COOPER	1000 N. 100 E.	555-1234
JAMES COOPER	1000 N. 100 E.	555-1234
KATHLEEN COOPER	1000 N. 100 E.	555-1234
LAWRENCE COOPER	1000 N. 100 E.	555-1234
MICHAEL COOPER	1000 N. 100 E.	555-1234
RONALD COOPER	1000 N. 100 E.	555-1234
SUSAN COOPER	1000 N. 100 E.	555-1234
THOMAS COOPER	1000 N. 100 E.	555-1234
WILLIAM COOPER	1000 N. 100 E.	555-1234

NAME	ADDRESS	TELEGRAMS	TELEPHONES
WILLIAM BROWN	1234 FAIRFIELD	123456789	123456789
JOHN SMITH	1234 FAIRFIELD	123456789	123456789
ROBERT MILLER	1234 FAIRFIELD	123456789	123456789
CHARLES HARRIS	1234 FAIRFIELD	123456789	123456789
EDWARD COOPER	1234 FAIRFIELD	123456789	123456789
FRANCIS GREEN	1234 FAIRFIELD	123456789	123456789
MARY BROWN	1234 FAIRFIELD	123456789	123456789
CHARLES COOPER	1234 FAIRFIELD	123456789	123456789
FRANCIS SMITH	1234 FAIRFIELD	123456789	123456789

STEP 0 00000
SAMPLE RUN SEPTEMBER 8 1969
PLOTTER SPEED 0.5 INCHES
PLOTTER DELAY 0.0 SEC
PLOTTER TIME 0.0 SEC
CLOCK TIME 0.0 SEC
TEMPERATURE 20

STEP 0 00000
SAMPLE RUN SEPTEMBER 8 1969
PLOTTER SPEED 0.5 INCHES
PLOTTER DELAY 0.0 SEC
PLOTTER TIME 0.0 SEC
CLOCK TIME 0.0 SEC
TEMPERATURE 20



8
STEP 0 00000
SAMPLE RUN SEPTEMBER 8 1969
PLOTTER SPEED 0.5 INCHES
PLOTTER DELAY 0.0 SEC
PLOTTER TIME 0.0 SEC
CLOCK TIME 0.0 SEC
TEMPERATURE 20

STEP 0 00000
SAMPLE RUN SEPTEMBER 8 1969
PLOTTER SPEED 0.5 INCHES
PLOTTER DELAY 0.0 SEC
PLOTTER TIME 0.0 SEC
CLOCK TIME 0.0 SEC
TEMPERATURE 20



STOP 6 1000 P
SAMPLE RUN
ANALYSIS 9
COUNT SPEED
PLOTTER DELET
ANALYSIS TIME
CYCLE TIME
TEMPERATURE

STOP 6 1000 P
SAMPLE RUN
ANALYSIS 9
COUNT SPEED
PLOTTER DELET
ANALYSIS TIME
CYCLE TIME
TEMPERATURE

STOP 6 1000 P
SAMPLE RUN
ANALYSIS 9
COUNT SPEED
PLOTTER DELET
ANALYSIS TIME
CYCLE TIME
TEMPERATURE

1000 P

STOP 6 1000 P
CALIBRATION RUN SEPTEMBER 6 1985
SAMPLE RUN 9
COUNT SPEED 1 INCHES
PLOTTER DELET 0.0 SEC
ANALYSIS TIME 400.0 SEC
CYCLE TIME 0 SEC
TEMPERATURE 25

PHOTOVAC

STOP 6 323.2

SAMPLE RUN SEPTEMBER 6 1983
SAMPLE # 20
CHART SPEED 1 INCHES
PLOTTER DELAY 0.0 SEC
ANALYSIS TIME 100.0 SEC
CYCLE TIME 0 SEC
TEMPERATURE 24

SAMPLE RUN SEPTEMBER 6 1983
SAMPLE # 21
CHART SPEED 1 INCHES
PLOTTER DELAY 0.0 SEC
ANALYSIS TIME 100.0 SEC
CYCLE TIME 0 SEC
TEMPERATURE 24

SAMPLE RUN SEPTEMBER 6 1983
SAMPLE # 22
CHART SPEED 1 INCHES
PLOTTER DELAY 0.0 SEC
ANALYSIS TIME 100.0 SEC
CYCLE TIME 0 SEC
TEMPERATURE 24

PHOTOVAC

STOP 6 324.2

SAMPLE RUN SEPTEMBER 6 1983
SAMPLE # 23
CHART SPEED 1 INCHES
PLOTTER DELAY 0.0 SEC
ANALYSIS TIME 100.0 SEC
CYCLE TIME 0 SEC
TEMPERATURE 24

SAMPLE RUN SEPTEMBER 6 1983
SAMPLE # 24
CHART SPEED 1 INCHES
PLOTTER DELAY 0.0 SEC
ANALYSIS TIME 100.0 SEC
CYCLE TIME 0 SEC
TEMPERATURE 24

SAMPLE RUN SEPTEMBER 6 1983
SAMPLE # 25
CHART SPEED 1 INCHES
PLOTTER DELAY 0.0 SEC
ANALYSIS TIME 100.0 SEC
CYCLE TIME 0 SEC
TEMPERATURE 24

STOP 6 - 978.0
SAMPLE RUN SEPTEMBER 6 1993
ANALYSIS #: 19
CHART SPEED 1 cm/min
PLOTTER DELAY 0.0 sec
ANALYSIS TIME 400.0 sec
CYCLE TIME 0 min
TEMPERATURE 35

STOP 6 - 978.0
SAMPLE RUN SEPTEMBER 6 1993
ANALYSIS #: 19
CHART SPEED 1 cm/min
PLOTTER DELAY 0.0 sec
ANALYSIS TIME 400.0 sec
CYCLE TIME 0 min
TEMPERATURE 35

STOP 6 - 978.0
SAMPLE RUN SEPTEMBER 6 1993
ANALYSIS #: 19
CHART SPEED 1 cm/min
PLOTTER DELAY 0.0 sec
ANALYSIS TIME 400.0 sec
CYCLE TIME 0 min
TEMPERATURE 35

STOP 6 - 978.0
SAMPLE RUN SEPTEMBER 6 1993
ANALYSIS #: 19
CHART SPEED 1 cm/min
PLOTTER DELAY 0.0 sec
ANALYSIS TIME 400.0 sec
CYCLE TIME 0 min
TEMPERATURE 35

STOP 6 - 978.0
SAMPLE RUN SEPTEMBER 6 1993
ANALYSIS #: 19
CHART SPEED 1 cm/min
PLOTTER DELAY 0.0 sec
ANALYSIS TIME 400.0 sec
CYCLE TIME 0 min
TEMPERATURE 35

STOP 6 - 978.0
SAMPLE RUN SEPTEMBER 6 1993
ANALYSIS #: 19
CHART SPEED 1 cm/min
PLOTTER DELAY 0.0 sec
ANALYSIS TIME 400.0 sec
CYCLE TIME 0 min
TEMPERATURE 35

Samples Done - Enclose

RUN # 14

SEP/89/85 15 56 7

WORKFILE ID: C

WORKFILE NAME:

ESTD

RT	AREA	TYPE	CAL #	AMOUNT
0.06	121630	PV		0.000
0.20	215730	VV		0.000
0.27	7452	VH		0.000
0.33	1.2563E+02	SHH		0.014
0.55	1.9034E+02	ISHH		0.026
1.02	20173000	TBV		0.41
1.32	6293500	TVV	4	1.181
2.01	8402000	ITBV		0.000

TOTAL AREA= 4.5076E+02

KUL FACTOR= 1.0000E+00

500 μl Soln

REF ID: C

REF #: RTME = 5
CAL# = 5

1	1	1	1	1
2	1	1	1	1
3	5	0	0	0
4	1	0	0	0
5	1	0	0	0

REF FR CAL # C

REF FR CAL #

STAB

1.04

1.08

1.38

1.58

RUN # 15

SEP/89/85 16 03 18

WORKFILE ID: C

WORKFILE NAME:

ESTD

T	AREA	TYPE	CAL #	AMOUNT
0.04	61735	PV		0.000
0.18	358390	VV		0.000
0.24	127410	VH		0.000
0.31	1.3032E+02	SHH		0.000
0.52	1.8815E+02	ISHH		0.000
1.00	6060200	TBV	3	0.986
1.30	6053700	TVV	4	0.911
1.99	217360	ITBV		0.000

TOTAL AREA= 4.5532E+02

KUL FACTOR= 1.0000E+00

RUN # 15

REF/89/85 16 03 18

WORKFILE ID: C

WORKFILE NAME:

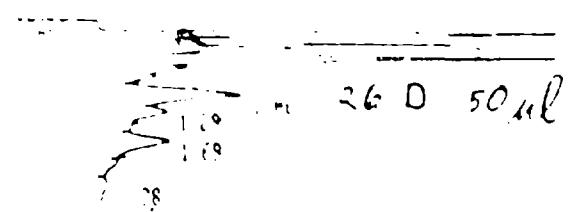
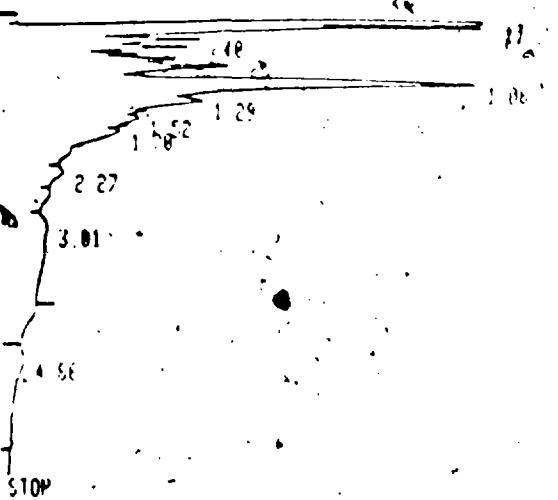
ESTD

RT	AREA	TYPE	CAL #	AMOUNT
0.04	61735	PV		0.000
0.18	356390	VV		0.000
0.24	127410	VH		0.000
0.31	1.3032E+02	SHH		1.000
0.52	1.8815E+02	ISHH	2R	1.000
1.00	6060200	TBV	3	1.000
1.30	6053700	TVV	4	1.000
1.99	217360	ITBV		0.000

TOTAL AREA= 4.5532E+02

KUL FACTOR= 1.0000E+00

Unmarked Sample - Sig-fa



RUN # 17
WORKFILE ID C
SAMPLE NAME

SEP/09/85 16 08 12

RUN # 16 SEP/09/85 16 08 12
WORKFILE ID: C
WORKFILE NAME:

ESTD

RT	AREA	TYPE	CAL #	AMOUNT
0.17	6692200	SPH		0.000
0.21	2.3843E+07	DSHB		0.000
0.27	1.667000	DTBP		0.000
0.48	6645000	TPV		
0.51	2.611100	TPV	3F	
0.66	1.965500	TPV		
0.68	7238400	TPV		
0.88	1.531500	TPV		0.000
1.06	7994500	TPV		0.000
1.29	2132000	TPV	4	3.188
1.52	1.045900	TPV		0.000
1.70	8260000	TPV		0.000
2.27	1448400	TPV		0.000
3.01	5912500	TPB		0.000
4.58	68485	BP		0.000

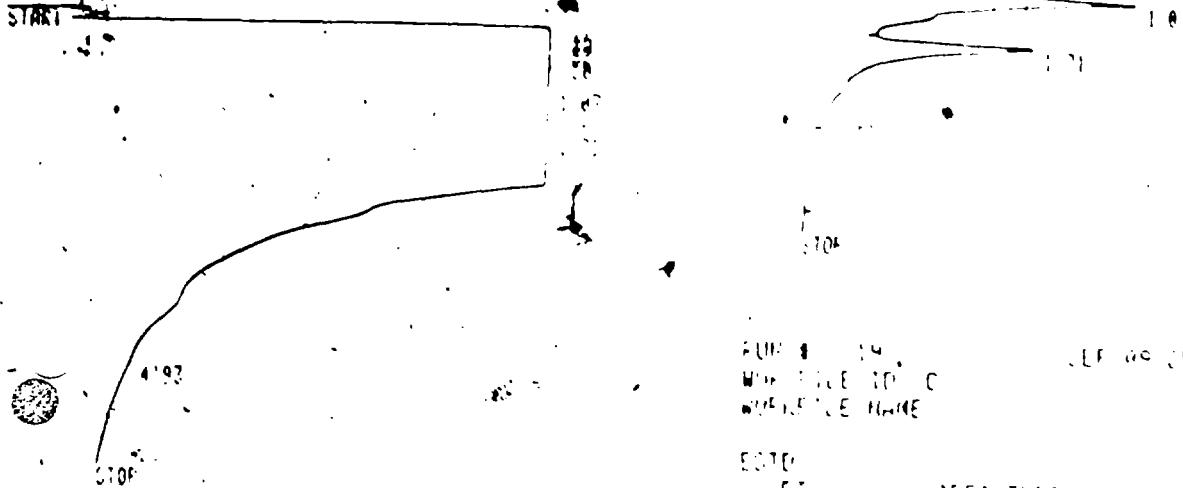
ESTD	RT	AREA TYPE	CAL #	AMOUNT
	0.17	1.4403E+07	DSHP	0.1000
	0.27	2.96340	TPV	0.0000
	0.31	1.937500	DTBP	0.0000
	0.39	2.633000	TPV	0.0000
	0.54	2.942800	TPV	1.5880
	0.66	3.755500	TPV	0.0000
	0.79	1.716700	TPV	0.0000
	1.06	2.083000	TPV	0.0000
	1.29	1.045900	TPV	3.1880
	1.52	1.225000	TPV	0.0000
	2.27	1.448400	TPV	0.0000
	3.01	5.912500	TPB	0.0000
	4.58	6.8485	BP	0.0000

TOTAL AREA= 4.7206E+07

TOTAL AREA= 4.7206E+07
M.R. FACTOR= 1.0000E+00 26D-50 μl

F27-5ft-58d

F27 5ft 58d



PUN # 18
WORKFILE ID: C
WORKFILE NAME

ESTD
RT AREA TYPE CAL # AMOUNT

0.18	4.2044E+07	TSHH	0.000
0.28	1.7160E+07	SHH	0.000
0.32	8.7910E+07	TSHH	0.000
0.50	2.8224E+08	TSHH	150.018
1.07	4.3351E+07	TBP	0.000
1	1.7501E+08	ISHH	0.000

TOTAL AREA= 6.4771E+08
WWD FACTOR= 1.000E+00

PUN # 14
WORKFILE ID: C
WORKFILE NAME

LF NO 15 15-32

ESTD
RT AREA TYPE CAL # AMOUNT

0.18	4.2044E+07	SPH	0.000
0.28	1.7160E+07	TBB	0.000
0.32	8.7910E+07	SHH	0.000
0.50	2.8224E+08	SHH	0.000
1.07	4.3351E+07	TBP	0.000
1	1.7501E+08	TPP	0.000

F27 5ft - 58d

FUN 1 26
WORKFILE ID: C
WORKFILE NAME:

REF 09 85 17 12 37

FUN 1 26
REF 09 85 17 12 37
WORKFILE ID: C
WORKFILE NAME:

RESTD

RT	AREA TYPE	CAL #	AMOUNT
0 03	17102 SHH	0 000	0 000
0 19	5246000 SHH	0 000	0 000
0 32	1149300 TEV	1	0 002
0 39	182020 OTVP	0	0 000
0 52	983570 TBP	2F	0 523
0 82	14527 TBP	0	0 000
93	12063 TBP	0	0 000
41	2 55700+02 SUP	3	42 196
82	-6165	0	0 000

TOTAL AREA = 4 RTYPE+02
MUL EA TYPE = 1 AMT=000

EDIT LARIS

PL 1

PL 1
RT=1
AMT=000
MUL AREA=

CAL 1

FUN 1 26
REF 09 85 17 12 37
WORKFILE ID: C
WORKFILE NAME:

STD

RT	AREA TYPE	CAL #	AMOUNT
0 02	14700 EV	0	0 000
0 17	182020 VH	0	0 000
0 20	2074E+02 SHH	0	0 000
0 52	1 32065E+02 ISHH	2F	0 523
1 0	600000 TEV	3	11 000
21	2211600 TEV	4	11 000
000	750000 TBP	0	0 000

TOTAL 1 AREA= 0002E+02
MUL EA TYPE =

24 C 4' 5cm²

TOTAL AREA = 3.870RE+07
WALL FACTOR = 1.0000E+00

5.4F

1.07

TOP

RUN # 20
DATAFILE ID: C
DATAFILE NAME:

ESTD

#	AREA TYPE	CAL #	AMOUNT
0 17	1.3484E+07	ISBH	R 1168
0 21	2.6253E+07	DTBP	R 1169
0 27	1.6729E+07	TPV	R 1170
0 48	1.6729E+07	TVV	R 1171
1 52	1.6729E+07	TVV	R 1172
1 53	1.6729E+07	TVV	R 1173
1 54	1.6729E+07	TVF	R 1174
1 67	2.5228E+07	TPV	R 1175
1 29	3.9146E+07	TVV	R 1176
1 70	1.7897E+07	TPV	R 1177

TOTAL AREA= 3.870RE+07

WALL FACTOR= 1.0000E+00

24 C 4' 5cm² (dup)

53.42 29

1.31 1.05

STOP

RUN # 21
DATAFILE ID: C
DATAFILE NAME:

#	AREA TYPE	AMOUNT
0 18	2.9438E+07	R 1168
0 23	1.7454E+07	R 1169
0 31	9.4259E+07	R 1170
0 53	2.5581E+08	R 1171
1 19	7.0245E+07	R 1172
1 73	7.1269E+07	R 1173

TOTAL AREA= 1.4657E+07
WALL FACTOR= 1.0000E+00

Blank 50 ul Z
(ambient air)

RUN # 21

SEP/09/85 14:48

RUN # 22
DATAFILE ID: C
DATAFILE NAME:

REF/09/85 14:51:47

RUN # 29
WORKFILE ID: C
WORKFILE NAME:
NO CALIB PEAKS FOUND

SEP/09/85 18:43

RT	AREA	TYPE	AF. INT.	AREAT
0.19	108378	IV	0.020	0.000
0.22	150128	D. VV	0.027	0.000
0.28	181128	IV	0.037	0.000
0.33	126778	D. VV	0.041	0.000
0.41	126130	VV	0.026	0.000
0.53	126130	VV	0.123	0.000
1.12	135358	VP	0.125	0.000
1.68	32536	FB	0.100	0.000
2.04	11162	BB	0.028	0.000

TOTAL AREA = 1453600
ML FACTOR = 1.0000E+00

240 3' 50 ml

138

112

140

205

STOP.

RT 0.00 11
WORKFILE ID: C
WORKFILE NAME:
NO CALIB PEAKS FOUND

RT	AREA	TYPE	AF. INT.	AREAT
0.28	125978	IV	0.032	0.000
0.41	127158	VI	0.125	0.000
0.53	14536	E	0.146	0.000
1.12	27297	IV	0.154	0.000
1.68	121720	VP	0.181	0.000

TOTAL AREA = 1745764
ML FACTOR = 1.0000E+00

RUN # 30
WORKFILE ID: C
WORKFILE NAME:
NO CALIB PEAKS FOUND

RT	AREA	TYPE	AF. INT.	AREAT
0.18	120368	IV	0.030	0.000
0.22	131670	D. VV	0.038	0.000
0.28	108960	D. VV	0.037	0.000
0.33	118890	D. VV	0.042	0.000
0.41	159670	VV	0.097	0.000
0.53	126130	VV	0.133	0.000
1.12	656120	IV	0.142	0.000
1.68	135358	VV	0.155	0.000
2.04	160320	VP	0.203	0.000

E-30\5'

5046

C-27 5046

32
FILE ID: C
FILE NAME:

SEP/09/85 17:33:31

RUN #: 34
MORFILE ID: C
MORFILE NAME:
NO CALIB PEAKS FOUND

SEP/09/85 17:33:31

PEAK #	RT	AREA	TYPE	AR/Ht	RT	AREA
0 608	0.18	950.1	PV	0.030	14 539	
1 163	0.26	64719 D	W	0.060	18 105	
0 800	0.33	48209 D	W	0.044	2 524	
0 800	0.41	113730	W	0.052	17 530	
0 800	0.47	54887	W	0.042	18 447	
0 600	0.53	175770	W	0.114	27 422	
0 600	0.10	89119	W	0.100	13 504	

TOTAL AREA: 6400730
REL FACTORY: 1.0000E+00

C-27, 5046

10 38
WKFIL 10 C
WKFIL NAME

ID RT AREA TYPE CAL 0 AMOUNT
0.03 126980 BV P 1000
0.12 231640 VV P 1000
0.24 66870 VH P 1000
0.36 1.1879E+07 SHH P 1000
0.52 1.4483E+07 ISHP 2P
1.00 6135900 TRV 3
1.31 6965000 TVV 4
2.00 1662300 TWT P 1000

IT AREA= 4.0075E+07
AL FACTOR= 1 PHASE+00

DELETE CALIB

ALIB ESTD

EF : 0700= 6
1700= 6

AL 0 RT
1 3 P
2 5 2
3 1 P
4 1 3
5

REF. CAL 0 2
REF. PK. CAL 0

RUN 0 38
WKFIL 10 C
WKFIL NAME

ESTD
RT AREA TYPE CAL 0 AMOUNT
0.03 126980 BV P 1000
0.12 231640 VV P 1000
0.24 66870 VH P 1000
0.36 1.1879E+07 SHH P 1000
0.52 1.4483E+07 ISHP 2P
1.00 6135900 TRV 3
1.31 6965000 TVV 4
2.00 1662300 TWT P 1000

IT AREA= 4.0075E+07
AL FACTOR= 1 PHASE+00

WKFIL 10 C
WKFIL NAME

ID RT AREA TYPE CAL 0 AMOUNT
0.10 194120 VH P 1000
0.22 1387400 SHH P 1000
0.28 1.438E+07 SHH P 1000
0.38 1085200 TRV P 1000
0.45 1.3.530 TTVB P 1000
0.61 93837 TRV P 1000
0.78 161240 TRV P 1000
1.10 167530 TRV P 1000
1.14 174440 TRV P 1000

- D W S C u l. v

EF 09 85 18 10 20

P 15
 P 20
 P 25
 P 30
 P 35
 P 40
 P 45
 P 50
 P 55
 P 60
 P 65
 P 70
 P 75
 P 80
 P 85
 P 90
 P 95
 P 100

TOTAL AREA = 125248
 HUL FACTOR = 1 PROBE+00

✓ D-32 2' 50af

	AREA	TYPE	CAL	ANOTHIT
P 18	48136	TPV		P 100
P 33	26351	VV		P 100
P 48	36563	VV		P 100
P 53	125208	VV	CP	P 100
P 58	125248	VV		P 100
P 73	37552	VH		P 100

SEP 09 1985 18 14 24

✓ D-32 2' 50af

RUN # 42 SEP 09 1985 18 14 24

WORKFILE ID C
 WORKFILE NAME

E TO	RT	AREA	TYPE	AL *	ANOTHIT
P 18	48136	TPV		125248	
P 33	26351	VV			
P 48	36563	VV			
P 53	125208	VV	2R	125248	
P 58	125248	VV			
P 73	37552	VH			

AL AREA = 247280
 HUL FACTOR = 1 PROBE+00

✓ D-32 2' 50af (new springe)

SEP 09 1985 18 20 21

WORKFILE ID C

WORKFILE NAME

E TO	RT	AREA	TYPE	CAL	ANOTHIT
P 17	1 1243E+02	SHH		P 80	
P 21	1 4763E+02	SHH		P 800	
P 27	1 7201E+02	SHH		P 800	
P 48	2 2528E+02	ISHH		P 800	
P 51	2 398200	TBB	2R	1 556	
P 56	2 728500	TBV		P 000	
P 29	896410	TVP	4	1 283	

TOTAL AREA = P 1259E+02

RUN # 43 SEP 09 1985 18 17 48

WORKFILE ID C

E-26 5' 5041
 1.6
 1.28
 1.89
 1.78
 STOP

TOTAL AREA = 3.21 E+07
 MUL FACTOR = 1.000000E+00

DELETE .CALIB

CAL ESTD

REF PK CAL 1

RUN # : 57 DEF.09/05 19 21 50

WORKFILE ID: C
WORKFILE NAME:

ESTD

RT	AREA	TYPE	CAL #	AMOUNT
1.18	1766600	SPH		0.000
2	44239	DTBP		0.000
2.8	53976	TBV	1	0.050
0.32	3.3441E+07	ISHH		0.000
0.39	320950	TBV		0.000
0.52	511530	TPV	2R	0.350
0.68	206920	TVV		0.000
0.68	308290	TVV		0.000
0.88	207030	TVV		0.000
1.66	1965600	TPV	3	3.236
1.28	1115600	TVV	4	1.597
1.67	6729500	TVV		0.000
2.28	4514100	TVV		0.000
4.00	194170	TPV		0.000
4.70	140650	TVV		0.000

CALIF ESTD

REF PK RT = 6
REF PK FTW = 6

CAL #	RT	AMT
1	3	0
2	5	0
3	6	0
4	5	0
5	6	0
6	5	0

REF PK CAL # 2
REF PK CAL 1

1.243 3' 5041

TOTAL AREA = 3.21 E+07
MUL FACTOR = 1.000000E+00

STD 500 ul

START

1.80
1.90
STOP

1.80 EST
 1 1132400 SPH
 0.28 8318500 ISHP
 0.41 818760 TVV
 0.52 331530 TVB 2 0.261
 1.85 1328000 TVB
 1.67 821676 ITPE 0.000
 0.000

RUN # : 58
DEF.09/05 19 27 50

WORKFILE ID: C

STOP

C-30 4' 50"

standard 500ul

RUN # 45
WORKFILE ID: C
WORKFILE NAME:

ESTD	RT	AREA	TYPE	CAL #	AMOUNT
P 15	26942M	B			E 0.008
P 25	54636	EP			E 0.018
P 28	64554M	TPP			E 0.008
P 41	67497	TPP			E 0.008
P 52	67211	TPB	2R		E 0.047
I 66	100588	TBV	3		E 0.164
I 99	20759	FB			E 0.008

TOTAL AREA= 3742900
FIL FACTOR= 1.0000E+00

standard 500ul 2

RUN # 44
WORKFILE ID: C
WORKFILE NAME:

ESTD	RT	AREA	TYPE	CAL #	AMOUNT
	0.03	107280	PV		E 0.008
	0.17	218258	VV		E 0.008
	0.23	47027	VH		E 0.008
	0.28	1.1720E+07	SHH		E 0.008
	0.38	1.332E+07	ISHH		E 0.008
	0.57	5570900	TBV	2R	E 0.164
	1.26	6069500	TVV	4	E 0.089
	1.92	232540	TBV		E 0.008

TOTAL AREA= 3.5093E+07
FIL FACTOR= 1.0000E+00

C-33C 5' 50ul 2

RUN # 46
WORKFILE ID: C
WORKFILE NAME:

ESTD	RT	AREA	TYPE	CAL #	AMOUNT
	0.02	76338	BV		E 0.008
	0.17	218170	VH		E 0.008
	0.29	1.1778E+07	SHH	1	E 0.915
	0.30	1.3372E+07	ISHH	2R	E 0.233
	0.37	5570900	TBV	3	E 0.072
	1.26	6069500	TVV	4	E 0.089
	1.92	232540	TBV		E 0.008

TOTAL AREA= 3.7317E+07
FIL FACTOR= 1.0000E+00

RUN # 50
WORKFILE ID: C
WORKFILE NAME:

ESTD	RT	AREA	TYPE	CAL #	AMOUNT
	0.18	405960	VV		E 0.008
	0.27	729380	D VV		E 0.008
	0.48	131220	VW		E 0.008
	0.51	155960	VB	2R	E 0.168
	1.06	36363	PV		E 0.008
	1.28	22262	VB		E 0.032
	1.94	312140	I EP		E 0.008

TOTAL AREA= 1136200

6-27 50 A.M.

1.58
1.93
2.27

STOP

RUN #: 51 SEP/89/85, 18 52 43
 WORKFILE ID: C
 WORKFILE NAME:

ESTD

RT	AREA	TYPE	CAL #	AMOUNT
0.18	1.1338E+07	ISHP		
0.28	642260	TBP	1	0.541
0.48	382260	TPV		0.000
0.51	30895	DTPV	2R	0.021
0.68	158898	TPV		0.000
0.68	114298	TPV		0.000
0.79	72273	TPV		0.000
1.03	44125	TBP	3	0.000
1.29	147498	TPV	4	0.211
1.58	157598	TPV		0.000
1.93	53239	TPV		0.036
2.27	25007	TBP		0.000

TOTAL AREA= 1.3149E+07

MUL FACTOR= 1.0000E+00

0.17	2.1254E+07	TBP		
0.18	2.1419E+07	SH		
0.32	1.4543E+07	DSH		
0.38	2.2355E+07	SHH		
0.51	1.9138E+08	SHH	2R	6.323
0.59	3.8199E+07	ISHH		0.000
0.62	1.2679E+07	TBV		0.000
0.78	4.3262E+07	TVP		0.000
1.05	4.6187E+08	TVP		0.000
1.26	6.3173E+08	TVP		0.000
1.66	4.6614E+08	TVP		0.000
1.97	1.12E+09	TBP		0.000
2.29	1.05E+09	TBP		0.000

TOTAL AREA= 1.4279E+08

MUL FACTOR= 1.0000E+00

24-E 50 ul

51 38 36

1.86

7.9

m

3 changed septam

24-E 3' 50 ul

2.06
2.67
1.26
1.66

STOP
3.93

RUN #: 52
 WORKFILE ID: C

SEP/89/85 18 57 41

RUN #: 53 SEP/89/85 18 57 25
 WORKFILE ID: C
 WORKFILE NAME:

ESTD

RT	AREA	TYPE	CAL #	AMOUNT
0.21	2.0850E+00	SPB		0.000
0.27	62178E	TBV	1	0.000
0.32	2.0533E+00	DTPV		0.000
0.38	9419E	TBP		0.000
0.51	5020E	TRB	2R	0.833
1.06	1.2954E+00	TRB		0.000
1.66	1.3714E+00	BB		0.000

TOTAL AREA= 0.303100

E22 3' 50 ml -

4' 98
STOP

RUN # 68
WATERFILE ID: C
WATERFILE NAME:

SEP/19/85 19 51 49

ESTD.

RT	LA	TYPE	CAL #	AMOUNT
	1.8100	SFH		0.0
	5.2963E+07	ISHH		0.0
41	1243800	TBV		0.0
52	3334400	TVB	2R	2.0
79	124510	TBP		0.0
86	1331900	TPV		0.0
27	427820	TVP		0.0
67	2.0004E+07	ITFB		0.0

TOTAL AREA= 8.7547E+07
WUL FACTOR= 1.0000E+00

✓27 E 4' 50 ml]

RT	LA	TYPE	CAL #	AMOUNT
8.02	1.0000E+07	SHH		0.000
8.14	5.182E+07	SHH		1.000
8.26	1.0000E+07	SHH		0.000
8.36	1.0000E+07	SHH	1	0.000
8.48	1.1342E+07	SHH		0.724
8.52	2.5000E+07	SHH	2R	0.000
8.69	28697	TBP		0.364
8.80	1562000	TBP		0.000
8.87	1.2458E+08	SHB		0.000
8.67	1.4207E+07	TBB		0.000

TOTAL AREA= 8.7547E+07
WUL FACTOR= 1.0000E+00

RUN # 62
WATERFILE ID: C
WATERFILE NAME:

SEP/19/85 19 51 49

ESTD.

RT	AREA	TYPE	CAL #	AMOUNT
8.19	245980	BV		0.000
8.21	328540	D VV		0.000
8.28	423290	VV		0.000
8.32	490500	D VV		0.000
8.39	399720	VV		0.000
8.51	380190	VV	2R	0.000
8.79	57200	BV		0.300
8.86	924640	VP		0.000
8.66	1264400	PP		0.000

TOTAL AREA= 4515000
WUL FACTOR= 1.0000E+00

61

SEP/19/85

STOP

RUN # 63
WORKFILE ID: C
WORKFILE NAME:

ESTD
RT AREA TYPE CAL #
0.28 247628 PV
0.28 435278 VV
0.41 2624388 VV
0.48 813438 VV
0.79 1519200 VV
0.79 2736500 VV
1.06 1417900 VV
1.21 764500 VV
1.38 766990 VV
1.67 1235900 VV
1.94 1555300 VB

SEP/09/85 19:56:41

RUN # 65
WORKFILE ID: C
WORKFILE NAME:

RT	AREA	TYPE	CAL #	AMOUNT
0.18	229468	PV		0.000
0.26	164848	VV		0.000
0.41	181000	VV		0.000
0.52	164748	VV	2R	0.130
0.68	299592	VV		0.000
0.68	163038	VV		0.000
0.84	298360	VV		0.000
1.07	318178	VV		0.000
	221640	VV		0.000
	348058	VB		0.000

NOE

TOTAL AREA= 1.4167E+07
MUL FACTOR= 1.0000E+00

Standard 500 uL J

STOP

1.26 .96

STOP

RUN #
WORKFILE ID: C
WORKFILE NAME:

SEP/09/85 20:01:15

ESTD

RT.	AREA	TYPE	CAL #	AMOUNT
0.02	65013	BY		0.000
0.7	189440	VH		0.000
0.58	1.0823E+07	SHM	1	9.633
0.54	1.1111E+07	ISHP	2R	8.253
0.56	4300400	TEV	3	0.564
1.26	4785700	TVV	4	0.300

RUN # 68
WORKFILE ID: C
WORKFILE NAME:

SEP/09/85 20:11:31

RT.	AREA	TYPE	CAL #	AMOUNT
0.18	77677	PV		0.000
0.24	56238	D VV		0.000
0.39	23974	VV		0.000
0.51	13656	VB	2R	0.011
1.07	93934	BP		0.000
	22973	PV		0.000
	79957	VB		0.000

TOTAL AREA= 3.63410
MUL FACTOR= 1.0000E+00

5' 6'
3' 6'
1' 6'
STOP

B 23 4.5'

50 x 6'
(new sponge)

4' 0" 69
WORKFILE ID: C
WORKFILE NAME:

SEP/09/85 20 16 88

ESTD

RT	AREA TYPE	CAL #	AMOUNT
0.18	CC7CCB	PV	0.000
0.39	230718	VV	0.000
0.52	1464200	VV	0.000
0.65	6076500	VV	0.000
1.03	1045300	VV	0.000
1.67	238350	VV	0.000
1.95	236310	VV	0.000

TOTAL AREA= 5523200
MUL FACTOR= 1.0000E+00

B 26 5' . 50 x 6' ✓

RUN # 71
WORKFILE ID: C
WORKFILE NAME:

SEP/09/85 20 23 29

RT	AREA TYPE	CAL #	AMOUNT
0.18	CC7CCB	PV	0.000
0.39	230718	VV	0.000
0.51	1464200	VV	0.000
0.78	6076500	VV	0.000
1.04	1045300	VV	0.000
1.26	238350	VV	0.000
1.65	236310	VV	0.000

TOTAL AREA= 3.8766E+07
MUL FACTOR= 1.0000E+00

✓ 25 F . 50 x 6' ✓

5' 52
1' 4
1' 68
STOP

RUN # 70
WORKFILE ID: C
WORKFILE NAME:

SEP/09/85 20 19 58

ESTD

RT	AREA TYPE	CAL #	AMOUNT
0.18	83911	PV	0.000
0.39	18294	VV	0.000
0.52	273600	VV	0.000
0.66	69391	VP	0.000
1.04	203150	PV	0.000
1.66	36615	VV	0.000
1.92	53869	VP	0.000

TOTAL AREA= 238830
MUL

RUN # 72
WORKFILE ID: C
WORKFILE NAME:

SEP/09/85 20 27 16

ESTD

RT	AREA TYPE	CAL #	AMOUNT
0.18	2.5442E+07	SPH	0.000
0.32	8.1193E+07	ISHH	0.000
0.51	9.6722E+07	ISHH	0.000
1.04	1.1318E+07	TRF	26.196
1.65	3.621000	TEL	25.171

TOTAL AREA= 738830
MUL

10285' 500 ft

25 F 5 ml J

163
STOP

RUE 73 SEP 09 1985 20 31 56
WORKFILE ID: C-
WORKFILE NAME:

- 88-88487

REC-#	DATE	FILE #	REF ID	REF ID
R 15	1966-08-07	DSNH		
R 22	1966-08-07	DSNH		
R 27	1966-08-07	SHH		
C 72	1966-08-07	SHH		
C 87	1966-08-07	DTBB		
L 58	1966-08-07	ISHA		
B 29	1966-08-07	TEP		
I 84	1966-08-07	TVE		
I 65	1966-08-07	TEP		

TOTAL METER = 1 33075.00
MIL FUEL TANK = 0 00000.00